

REMARKS

Upon entry of the present amendment, claims 1-4 and 8 will remain pending in the above-identified application and stand ready for further action on the merits.

The amendments made herein to the specification and claims do not incorporate new matter into the application as originally filed or present substantial new issues for the Examiner's consideration, which might otherwise warrant non-consideration of the instant amendment at present.

In support of the above contention, it is noted that claim 1 has been amended to recite "oxalic acid" instead of "a polyprotic carboxylic acid having about 2 to 12 carbon atoms". Based on this amendment to claim 1, it has also been necessary to cancel claims 7 and 9-10, which recited larger Markush groupings, including "oxalic acid".

Similarly, regarding the amendment to claim 4, it is noted that this simply changes the word "and" to "or" in order to put the claim in better condition for allowance.

Regarding the amendment to page 5 of the specification, this simply replaces the word "holds" with the word "times" in order to provide clarity in the specification.

Accordingly, based upon the above considerations, entry of the present amendment is respectfully requested.

Claim Rejections Under 35 USC § 103

Claim 7 has been rejected under 35 USC § 103(a) as being unpatentable over Uchiumi et al. '480 B1 (US 6,329,480 B1) in view of Wojtech et al. '622 (US 5,073,622). Further, claims 1-4 and 8 have been rejected under 35 USC § 103(a) over Uchiumi et al. '480 B1. Reconsideration and withdrawal of each of these rejections is respectfully requested based upon the following considerations.

The Present Invention and Its Advantages

The present invention relates to a process for producing a poly(meth)acrylate having a reduced metal content. More precisely, the invention relates to a process for producing a poly(meth)acrylate having a reduced metal content, which comprises contacting a mixture of a poly(meth)acrylate and an organic solvent with an acidic aqueous solution obtained by dissolving "oxalic acid" in water.

As recited in the pending claims, the poly(meth)acrylate having a reduced metal content is one in which "a bound site to (meth)acrylate acid is a tertiary carbon or in which said site is an acetal". Such poly(meth)acrylates in which a bound site to (meth)acrylic acid is a tertiary carbon or in which said site is an acetal are useful as resins for resist for high-energy radiations such as far ultraviolet rays (including excimer laser and the

like), electronic rays, X-rays or radiation lights. With the invention, poly(meth)acrylates having a reduced metal content can be produced without substantially having hydrolysis occur.

Distinctions Over the Cited Art

Applicants wish to incorporate herein by reference remarks set forth in Applicants' prior response of June 10, 2003 at page 6, line 16 to page 8, line 25, since such remarks are appropriate to evidence the non-obviousness of the present invention over the cited references.

Apart from the above incorporated remarks, the following comments further evidence the non-obviousness of the present invention.

In Uchiumi et al., hydrochloric acid and respective aqueous solution of sulfuric acid, nitric acid, acetic acid, propionic acid and citric acid are described as acidic aqueous solutions. However, instant claim 1 is amended to restrict the polyprotic carboxylic acid to oxalic acid. By washing the resin above with aqueous oxalic acid, the metal content of the resin is remarkably reduced compared to washing with aqueous acetic acid, aqueous propionic acid and even malonic acid (which is a very similar dicarboxylic acid described in Wojtech et al.). The chemical

structure of oxalic acid is HOOC-COOH and that of malonic acid is $\text{HOOC-CH}_2\text{-COOH}$.

In order to evidence that unexpected results are associated with the instant invention as claimed, Applicants submit a comparative experimental report in the form of a 37 CFR § 1.132 Declaration of Mr. Kazuhiko Hashimoto.

At this point, the Examiner is respectfully requested to review Mr. Kazuhiko Hashimoto's accompanying 37 CFR § 1.132 Declaration. Upon full review thereof, including Table 1 at page 3 thereof, the Examiner will fully understand that the present invention and its use of "oxalic acid" provides totally unexpected and advantageous results when compared with Comparative Examples utilizing acetic acid (Comparative Example 1), propionic acid (Comparative Example 2), and malonic acid (Comparative Example 3). More particularly, the results provided in Table 1 show that the metal content of the resin obtained in Example 1 (present invention) is remarkably reduced compared to each of Comparative Examples 1-3. This is particularly impressive with regard to Comparative Example 3, which utilizes "malonic acid" therein, having a structure very similar to that of "oxalic acid", as noted above.

Accordingly, based upon the above considerations, the amendments made herein, and the comparative testing set forth in

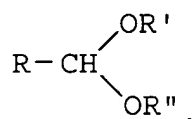
Mr. Hashimoto's accompanying 37 CFR § 1.132 Declaration, it is clear that the outstanding rejections under 35 USC § 103(a) must be withdrawn.

Additional Considerations

In paragraph/item numbers "4." to "7." of the Office Action, the Examiner makes note of several matters which Applicants wish to address.

In item "4.", the Examiner notes a typographical error at page 5, line 21 of the specification. Applicants have amended the specification to correct the typographical error.

In item "5." of the Office Action, the Examiner appears to indicate an objection to the term "acetal" in Applicants' claims. Applicants note that the chemical formula for acetal is:



Accordingly, based upon Applicants' clarification of the structural formula for acetal, it is believed that no further amendment to claim 1 is required, and that claim 1 as instantly amended particularly and distinctly sets forth Applicants' invention, and that any objection to claim 1 must be withdrawn.

In item "6." of the Office Action, the Examiner makes an objection to claim 4 for not stating "R₁" groups in the

alternative. As indicated above, claim 4 has been amended to recite such groups in the alternative.

In item "7." of the Office Action, the Examiner objects to claim 3 for including 1-methoxyethyl and 1-ethoxyethyl, alleging that they do not qualify as "acetals or tertiary carbon containing fragments". In response, Applicants note when R_2 is 1-methoxyethyl or 1-ethoxyethyl, it has the partial structure of $-O-CH(CH_3)-O-CH_3$ or $-O-CH(CH_3)-O-CH_2CH_3$, and therefore, the structure does qualify as acetal.

CONCLUSION

Accordingly, based upon the above amendments, remarks and the accompanying 37 CFR § 1.132 Declaration of Mr. Kazuhiko Hashimoto, the Examiner is respectfully requested to reconsider and withdraw each of the outstanding rejections of record, and to issue a Notice of Allowance clearly indicating that each of the pending claims 1-4 and 8 are allowed and patentable under the provisions of Title 35 of the United States Code.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact John W. Bailey (Reg. No. 32,881) at the telephone number below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

Appl. No. 09/956,890

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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By 

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Enclosure: 37 CFR 1.132 Declaration of Mr. Kazuhiko Hashimoto